

A breath of fresh air

Singapore is hailed as Asia's greenest city, with projects such as the Eden ultra-luxury residences showing how nature forms an integral part of building design

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Kermit the Frog once lamented that it wasn't easy being green. Large-scale developers who for years have been trying to reconcile economic and environmental concerns would agree.

Yet after the announcement in March that Swire Properties had sold all 20 units at Eden, its ultra-luxury residential project in Singapore acclaimed for its "biophilic" aspects – those that focus on humans' innate attraction to nature – for \$295 million (HK\$1.7 billion), it seems it's becoming easier.

The seeds have been sown for some time in Singapore, where biophilic architectural accomplishments have built on the "garden city" vision of the late founding prime minister Lee Kuan Yew. It started as a desire to green the island quickly to provide shade and access to nature for all. Fifty years later and Singapore has evolved into a "city in a garden", where pervasive plant life and biodiversity are inherent parts of the built environment.

Singapore is Asia's only biophilic city, according to Richard Hassell, co-founder of architectural firm WOHA, the long-time leaders in green design in Singapore. But the concept, while in its infancy in Hong Kong, has been gaining traction across the region for some time, with major projects in Taiwan, South Korea, Japan, Indonesia and the mainland, in particular, hotly following the Lion City's lead.

Swire's first residential foray into Singapore is the most recent designed around the scientific principle that connecting humans to nature improves well-being.

"It's all about human experience and emotion," says Thomas Heatherwick, the project's London-based designer. "I want the residents to live well in this incredible tropical environment. I want the person who lives in these homes to be able to feel and smell the qualities of nature."

Heatherwick Studio is the creative force behind some of the world's most original design and architectural projects, including the UK Pavilion at the 2010 World Expo in Shanghai and, most recently Vessel, in New York, which opened in 2019 in Manhattan's Hudson Yards. Its 1000 Trees development project in Shanghai, which takes the epic form of a mountainous, tree-covered topography, is expected to be equally distinctive when it opens this year.

In Hong Kong, the studio, in its first collaboration with Swire Properties, is responsible for the 2011 revamp of shopping mall Pacific Place, now regarded as one of the most beautiful retail destinations in the world.



Clockwise: a series of cantilevered hanging gardens at Eden by Swire Properties; a view of the Eden residential tower; The Hive at Nanyang Technological University, Singapore.



The 36-storey Newton Suites development is designed as a house in the sky, complete with large cantilevered skygardens – the first, and now much repeated, resolution seen in Singapore – and a vertical green wall that was the world's tallest for more than a decade. The area of vegetation exceeds 130 per cent of the site, all achieved within a standard commercial budget.

Hassell says this was brought to the attention of the Urban Redevelopment Authority when the building was up for an award. Its development without government incentives was so impressive that it led to Singaporean legislation requiring 100 per cent replacement green on projects in the city, he says, effectively meaning every development had to match a building's footprint with an equivalent area of greenery.

"No one wants to be the first, due to risks and costs," Hassell says. "I am proud that we managed it's the power of the prototype. Fifteen years ago, others were critical and resistant. One very well-known architect told us at the time that we had done little more than add plants to a high-rise."

People began to realise that the greenery wasn't just decorative planting

RICHARD HASSELL, CO-FOUNDER, WOHA

Today that architect is popular for employing the same sustainable techniques, with international notoriety.

"People began to realise that the greenery wasn't just decorative planting," Hassell says.

"They could see that for 24 hours a day those plants were working to reduce carbon dioxide, decrease pollutants, organic compounds, dust, humidity, [and] attract birds and bees. These are real benefits, as well as being emotionally appealing."

Hassell says that designers and developers have now built a body of knowledge around the practice. Species selection is understood better. Specialist contractors have built prototypes and systems, making them more affordable and increasing competition in the industry. Maintenance, once a huge hurdle, and facilities management, are now more effective and cost-efficient. The benefits are now high and the risks low.

"And it's that culture shift in our mindset that has been most beneficial," Hassell adds.

"While that language was new to us, it is now internalised in the next generation of practitioners, and they will carry this forward."

"The benefits will continue to diffuse, he says.

"They are cumulative. If we design one sustainable building, little changes. If we design an entire district of buildings with moving air columns and clusters of sky gardens where you can sit and watch the birds nesting and flying between them, then we will have made a real impact."

At Eden, Heatherwick has recreated the verdant home garden of yore, extending the landscape from ground level up through the building via a series of cantilevered hanging gardens, sealed to maximise shading. The layers of plants, which are a mix of diverse,

landscape architects Coen Design International, accompanying them on their visits to the site and pushing to get the mix right.

"The project was about horticulture, botanical residences – for me the plants are like exhibits rather than just garnishes around the edge of a plate, so every single one was carefully selected," Heatherwick says.

In another attempt at increasing the health benefits at Eden, the traditional bookie floor plate common in residential towers has been pulled apart, placing the bedrooms and service areas on the perimeter. This allows for a large, light-filled central living space with windows on three sides, providing 270-degree natural cross-ventilation. Heatherwick says he is most proud of this alternative to air conditioning.

Rather than just "greenwashing", Heatherwick says he has long designed with attention restoration theory in mind – a philosophy developed by environmental psychology specialists Rachel and Stephen Kaplan in the 1980s. It surmises that natural environments can restore and rejuvenate us, boost our attention and keep us healthier, basically the adage "Feed blue, touch green," but with stacks of empirical data to prove it. With the continuing urbanisation of the population, biophilic design connects us with our inherent need to be with nature.

Incorporating biophilia into the home can reduce stress, lower heart rates and blood pressure, and increase creativity, productivity and well-being, according to a landmark 2014 report by US sustainability consulting firm Terrapin Bright Green.

Heatherwick's first Singapore project, The Hive, at Nanyang Technological University, completed in 2015, reimagines the layout of a typical tertiary institution by building one at a more

human scale. Its cluster of 12 tapered concrete towers surround an expansive atrium, combining learning facilities with social spaces, gardens and open-air corridors. Balconies extend around the inside of the towers and become larger towards the top, shading the spaces below. It is naturally lit and ventilated, letting air circulate throughout.

No conversation on green design in Singapore is complete without mention of WOHA, which was founded in 1994 by Hassell and Wong Mun Summ.

WOHA's Parkroyal Collection Pickering luxury hotel project, completed in 2013, brings about 15,000 square metres of greenery back into the city – almost double the area of the building site – with its elevated terraced gardens, and has green plot ratio of 240 per cent. This, plus its naturally ventilated corridors, rainwater retention, irrigation and solar power, helped the project achieve Singapore's highest

environmental certification: the Building and Construction Authority's Green Mark Platinum rating. Heatherwick's Eden project has also received this distinction.

Most of WOHA's 50-plus projects, including residential towers, hotels, train stations, universities and community hubs, make use of sustainable features. Its Newton Suites residential complex – completed in 2007 in the upscale District 11, not far from the hawker food centres seen in the hit *Crazy Rich Asians* film – started the biophilic trend in the city state.

"Designing green wasn't a defining brand value as such," Hassell says. "It's just that Mun and I both had gardening and science backgrounds of sorts, so it was inherent in our work. It was not until we started working on larger buildings in the city, carrying our ideas through and up into high-rises, that the concept started to grow."

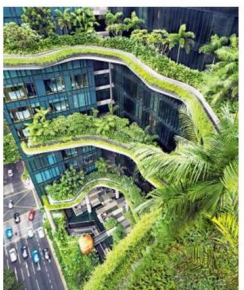
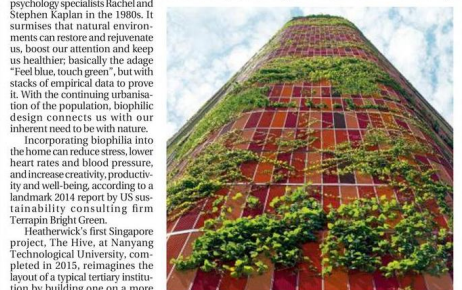
Oasia Hotel Downtown in Singapore, designed by WOHA, has a 1:10 per cent green plot ratio (left); WOHA's Parkroyal Collection Pickering project (right). Photos: Handouts

I want the residents to live well in this incredible tropical environment

THOMAS HEATHERWICK, HEATHERWICK STUDIO

sculptural and rare tropical varieties, significantly counter the heat, absorb rainwater and filter pollutants – while heightening the symbiotic relationship between indoors and outdoors.

For this, Heatherwick says he and his team worked closely with Eden's Singapore-based



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